OARDC Research Enhancement
Competitive Grants Program

SEEDS
Number 7

Evaluation of the Effect of Diet on Quality of Alpaca Fleece Fiber Phase I: Determination of Effective Evaluation Parameters

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This project, funded by the OARDC Research Enhancement Competitive Grants Program and matching industry funds, is a sterling example of creative, innovative and interdisciplinary research with an eye toward value-added product development and the possibility of new enterprise. Ohio ranks second in the nation in total alpaca population as well as in the number of alpaca owners and breeders. The average price of a registered alpaca is $20,000–$30,000, with some animals costing more than $100,000. The industry is expanding exponentially with 40 new farms added to the Alpaca Registry each month.

As the number of alpacas in Ohio and North America steadily increases, owners and breeders are taking a serious look at alpaca fiber as a value-added product. Because the fiber feels soft, insulates better than sheep's wool, and comes in a variety of natural colors, it can be used in unique niche products. The textile industry is increasing its demand for renewable, environmentally friendly fibers and fabrics. Along with this demand comes an increasing demand for the animals that produce these fibers. Because of this, raising alpacas can be an easy way for farmers to diversify. In addition, fiber cooperatives are rapidly forming to promote markets and increase producer profits. Currently, alpaca fiber is in great demand by many cottage industries, including spinners, weavers, fabric artisans and clothing designers.

For the commercial textile industry to develop the use of alpaca fleece, fundamental information is needed about fiber characteristics and what affects them so that quality and quantity can be ensured by suppliers. This project examined diameter, diameter variation along length, fiber length, scale length, fiber bundle tensile strength and microscopic appearance to establish how they vary within and between animals. Fibers were screened and evaluated from animals fed four different controlled diets for six months.

CHALLENGES

Little is known about the performance properties and physical and chemical structure of alpaca fibers, especially because South American and North American animals see different climates and diets. Basic but essential work must be done to establish the characteristics of these fibers before determining the effects of diet, gender, species and climate. Much is known about sheep wool, but this information can not be directly translated to alpacas because of the differences in the animals themselves, in their digestive systems and in enzyme production.

ACHIEVEMENTS

Techniques were developed to consistently and reliably analyze the physical and chemical structure of alpaca fibers. The techniques will help provide the textile industry with the information it needs to commercially develop products from alpaca fibers. The work showed that fiber characteristics such as strength and fiber length are affected by diet.

FUTURE PLANS

Funding from the OARDC RECGP, complemented by support from private industry, has allowed this project to proceed to Phase II, which consists of studying the influence of two different dietary regimens on animal health and fiber characteristics. Funding from USDA, from private foundations and from textile manufacturers is currently pending for additional phases of the program.

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